COMMITTEE ON SCIENCE
SUBCOMMITTEE ON ENVIRONMENT, TECHNOLOGY, AND STANDARDS
U.S. HOUSE OF REPRESENTATIVES

HEARING
FY 2005 EPA Budget
Thursday, March 11, 2004
10:00 a.m. to 12:00 p.m.
2318 Rayburn House Office Building

1. Purpose

On Thursday, March 11, 2004 at 10:00 a.m. the House Science Subcommittee on Environment, Technology, and Standards will hold a hearing to examine the Environmental Protection Agency's (EPA) fiscal year (FY) 2005 budget request that proposes steep cuts in the Science to Achieve Results (STAR) grants program. Managed by EPA's Office of Research and Development (ORD), the STAR program supports research at colleges and universities on a wide array of environmental science issues.

The hearing will examine why the Administration has proposed a $35 million (or 35 percent) reduction in the grant program and the consequences of the reduction.[1] Specifically, the proposed reduction would reduce EPA-sponsored external (also called extramural) research on pollution prevention and eliminate STAR funding for research in the areas of ecological systems, endocrine disruptors, hazardous substances and mercury. The hearing will also examine the extent to which the Office of Management and Budget's (OMB) effort to assess the performance of government programs under OMB's Program Assessment Rating Tool (PART) led the Administration to propose these reductions.

The subcommittee plans to explore the following questions:

1. Why does EPA's FY 05 budget request propose to eliminate funding for EPA's STAR research grants to colleges and universities for research on ecological systems, pollution prevention, endocrine disruptors, hazardous substances, and mercury? What are the consequences of these reductions?

2. To what extent did the OMB's PART review of EPA's ecological and pollution prevention research programs drive these reductions?

3. How can the performance of environmental research programs best be measured? How do OMB's efforts to assess the performance of EPA's program differ from those of the National Academy of Sciences and EPA's Science Advisory Board?

[1] The proposed reductions to the STAR program described here and in detail below are compared to the President's FY 04 budget request. EPA's final FY 04 spending will not be available until the agency's operating plan is completed.

Witnesses:

- **Mr. Clay Johnson III,** Deputy Director for Management, Office of Management and Budget.
- **Dr. Paul Gilman**, Assistant Administrator, Office of Research and Development, Environmental Protection Agency.
- **Mr. Paul Posner**, Managing Director, Strategic Issues, U.S. General Accounting Office (GAO); Managed GAO's recent report, *Performance Budgeting: Observations on the Use of OMB's Program Assessment Rating Tool for the Fiscal Year 2004 Budget*, GAO-04-174.
- **Dr. Genevieve Matanoski**, Professor, Johns Hopkins University, Chair, EPA Science Advisory Board's Review of EPA's FY 2005 Budget Request; former Chair, EPA's Science Advisory Board (SAB).
- **Dr. Costel Denson**, Professor, University of Delaware, member of the National Academy of Sciences panel that authored *The Measure of STAR: Review of the U.S. Environmental Protection Agency's Science to Achieve Results (STAR) Research Grants Program* (2003).

Brief Overview

The President's budget for FY 05 proposes to cut Science and Technology (S&T) at EPA by $92 million, or about12 percent. The most significant percentage cut to S&T (other than the elimination of earmarks) would reduce funding for EPA's external grants program by almost 35 percent.

These proposed cuts to the grant program, known as Science to Achieve Results (STAR), are especially noteworthy because in the last decade a number of outside experts, including the National Academy of Sciences (NAS), have urged EPA to fund research outside of its own laboratories. Most notably, the NAS praised the STAR grant programs in its 2003 report, *The Measure of STAR: Review of the U.S. Environmental Protection Agency's Science to Achieve Results (STAR) Research Grants Program*. The report argues that the external STAR grants are a critical means for the agency to have access to expertise that it does not have in-house, and to respond quickly to emerging issues. The external grants have also often been favored by critics of EPA who view EPA's in-house scientists as too likely to come up with research results that would favor a pre-existing regulatory agenda.

The cuts to STAR have also attracted attention because they can be seen as a test case of how the Administration is using a new system the Office of Management and Budget (OMB) has created to evaluate the effectiveness of federal programs and inform spending decisions. The system is known as the Program Assessment Rating Tool (PART). Each year, OMB is selecting programs at each agency to evaluate using PART. It hopes to have reviewed all programs within the next four years.

The proposed cuts to STAR raise two sets of questions about PART: How fairly does the PART tool evaluate programs? And how does the Administration apply PART evaluations in making budget decisions? The General Accounting Office (GAO) recently

weighed in on the first question with a report, *Performance Budgeting: Observations on the Use of OMB's Program Assessment Rating Tool for the Fiscal Year 2004 Budget* (see more detail below).

The proposed cuts to STAR raise particularly thorny questions about the use of PART. Most problematically, STAR grants are part of larger programs targeted at particular environmental issues. The STAR grants targeted for cuts are part of five separate research programs: ecological systems, pollution prevention, endocrine disruptors, mercury, and hazardous substances. The PART was applied to the first two programs as a whole; the external grants were not evaluated as a separate element. The other three programs were not evaluated at all. Other issues about the way PART relates to the STAR program and EPA's research and development (R&D) programs are described below.

The Five Programs – What They Do And What Would Be Cut

Ecological Research. EPA characterizes the $110 million ecological research program as a core or basic research program. Its goal is to develop the scientific understanding to determine ecosystem conditions and trends, diagnose impairments, forecast ecosystem vulnerability and, ultimately, restore degraded ecosystems. For example, recent STAR funded research has been instrumental in developing scientifically grounded ways to measure water and ecosystem quality[2] along the nation's coastal areas and in the mid-Atlantic region.

According to EPA, the $22 million cut to STAR would eliminate 50 grants in FY 05 across all areas of the ecological research program. The proposed cuts would slow research on water quality in FY 05 in the Ohio and Mississippi River basin and eliminate grants for research in such areas as western rivers and streams, the Great Lakes, and the Gulf of Mexico.

Pollution Prevention. EPA's pollution prevention research program develops tools, technologies, and new systems for preventing pollution. Most of the $50 million program funds applied research, such as the development of innovative technologies for reducing the use of hazardous solvents. However, a small portion of the program supports extramural grants for more basic research on sustainable technologies. For example, in work that EPA carries out in partnership with the National Science Foundation, EPA supports research in so-called "green chemistry," which promotes safer chemicals and chemical manufacturing processes.

The proposed budget would redirect $5 million from research to a pollution prevention outreach program in another part of the agency. Redirecting these funds would eliminate $3 million in STAR funding, which is EPA's contribution to the EPA-NSF partnership.

[2] A large portion of the STAR grants in ecological research support the measurement of ecological conditions and most of ecological condition research is carried out through the Environmental Monitoring and Assessment program (EMAP) program, a program that the Committee has supported in recent years.

Endocrine Disruptors. EPA's $13 million research program focuses on providing a better understanding of the effects of endocrine disruptors and on humans, wildlife, and the environment. EPA also is developing new methods to screen chemicals for their potential endocrine effects. The program invests in both basic and applied research.

The proposed budget would cut $4.9 million, which would eliminate the entire STAR grant research program on endocrine disruptors. The funds would otherwise have supported research on the extent to which humans and wildlife are exposed to endocrine disruptors, an area that the NAS and the World Health Organization have identified as an important research gap.

Mercury. The goals of EPA's $7 million mercury research program are to reduce and prevent the release of mercury into the environment and to understand how mercury moves through the environment. This research supports a variety of the agency's air and water regulatory programs by developing control technologies, measuring mercury deposition, and attempting to understand the effect of mercury on wildlife. The proposed $1.9 million reduction to the STAR grant portion of the mercury research program would eliminate STAR research in FY 05 on how and where mercury moves through the environment.

Hazardous Substances. EPA established five university-based centers affiliated with 22 universities to address concerns about hazardous substances in the environment. Each center has developed a research program to meet regional needs. Centers are based at Johns Hopkins University, Louisiana State University at Baton Rouge, Purdue University, Colorado State University at Fort Collins and Oregon State University at Corvallis. The proposed $2.3 million dollar reduction in STAR funding would eliminate ORD's contribution to these centers.

What is the Value of Extramural Research at EPA?

The NAS reviewed EPA's STAR program in 2003. The report, *The Measure of STAR: Review of the U.S. Environmental Protection Agency's Science to Achieve Results (STAR) Research Grants Program*, reaffirmed earlier National Academy recommendations that EPA should maintain an appropriate balance between its intramural and extramural research programs. (See the Attachment A for a summary of the report.) The report gave the STAR program a strong endorsement, calling it "EPA's preeminent program that solicits independent scientific and technologic research from the nation's best academic and nonprofit research institutions." It also described STAR as enabling EPA to have access to the broad research community, fund research at the cutting edge of science, respond quickly to new issues, and address research gaps when EPA lacks the appropriate in-house expertise. It specifically praised the unique contributions that the STAR program is making to endocrine disruptors and ecological indicators research. The report concluded by recommending that ORD maintain STAR funding at a level somewhere between 15 and 20 percent of ORD's total budget.[3]

[3] If this were the case, and ORD were to be funded at $572, the level requested in the President's FY 05 budget request, STAR funding would then need to be between $86 million and $114 million. However,

What is the Program Assessment Rating Tool (PART) and what did GAO conclude in its recent assessment of the PART?

The Program Assessment Rating Tool (PART) is a new evaluation tool developed by OMB to assess the performance of federal programs and to link that performance to spending decisions. It judges programs on their purpose and design, strategic planning, management and results, heavily weighting the results portion of the review. Based on the review, OMB rates a program as either effective, moderately effective, adequate, ineffective, or "results not demonstrated." (See Attachment B for a more detailed description of the PART.) OMB plans to apply the tool to all federal programs within the next four years.

The Government Accounting Office (GAO) recently reviewed the PART process, though it did not specifically review its application to R&D programs (*Performance Budgeting: Observations on the Use of OMB's Program Assessment Rating Tool for the Fiscal Year 2004* Budget, GAO-04-174). (See Attachment C for a summary of the GAO report.) According to GAO, the PART process has reinvigorated the Executive Branch's focus on performance budgeting. However, GAO also concluded that OMB must do more to ensure fair and consistent application of the PART. GAO described the PART as "a work in progress" and needing "[a]dditional guidance and considerable revisions…to meet OMB's goal of an objective, evidence-based assessment tool." GAO concluded that there are inherent challenges when applying the PART's restrictive yes/no format to programs with multiple purposes and goals, and recommended, among other things, that OMB clarify subjective terminology, provide flexibility in judging complex programs, clarify when output and outcome measures are appropriate, and increase dialogue with agency staff on such things as the definition of the program that will be reviewed.

The way OMB applied the PART to EPA's S&T programs may illustrate some of GAO's concerns. For example, many of EPA's R&D programs have multiple goals and purposes, such as combining basic and applied, as well as intramural and extramural research, in one program. In addition, OMB's decision to evaluate the overall ecological research program may have led to challenges for EPA, which had never evaluated the entire program.[4]

What did the PART evaluation conclude about the ecological research and pollution prevention programs and was the PART applied fairly?

OMB used the PART to evaluate two of the five programs with extramural research elements that were cut in the President's budget. OMB concluded that the ecological and

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the President's request for STAR in FY 05 appears to be no more than $65 million, and may be even less than that.

[4] EPA has evaluated subprograms that cut across all of its research programs, such as the STAR program, and elements of the ecological research program, such as Environmental Monitoring and Assessment Program.

pollution prevention research programs could not "demonstrate results," because neither had adequate standards to measure the progress of the programs.[5]

EPA has said it disagrees with how OMB applied the PART and the conclusions it reached. The primary area of disagreement appears to be over how to measure the performance of EPA's R&D programs.[6] For example, EPA views the ecological research program as more of a basic research program, making it similar to research supported by the National Science Foundation (NSF). In OMB's PART review of NSF programs, it measured the performance of those programs using process indicators, such as whether the agency has conducted the appropriate peer reviews and how quickly it processes research grants. EPA maintains that its program should be similarly evaluated.

OMB, however, seems to want more than process measures to evaluate EPA's R&D programs. According to both EPA and the public PART review documents, OMB seems to want EPA to measure its programs less on process and more on output and outcome measures, such as the degree to which others used the products of the research, and how much pollution the research reduced or might reduce in the future. EPA agrees that its research strategic plans should make the connection between research and eventual reductions in pollution. However, it does not believe that either its basic or applied research programs should be held accountable for the actions of others who are outside of EPA's control and who may or may not use EPA's research products.

EPA seems to believe that its R&D programs should be evaluated through a peer review process that considers the degree to which the research reflects the state of the science, adds knowledge to the field, and creates tools and methods that others could use. This view seems consistent with the views of EPA's SAB and various NAS reports, such as the STAR report, on the proper way to evaluate R&D. These reports have also praised EPA's for developing high quality basic, extramural research programs that develop knowledge, but are not tied to regulatory results.

Why was the ecological research and pollution prevention program cut and who decided to cut it? Was the decision related to the PART? The Administration's proposed budget clearly shows that OMB decided to cut the ecological and pollution prevention research programs because of their low PART scores. OMB's specific mention of the amount of the proposed reduction in the PART summaries makes this readily apparent. However, what is less clear is why these programs were cut when many other EPA programs could not demonstrate results either. OMB evaluated a total of 20 EPA programs in FY 04 and could not determine results for 13 of them. Of those 13, some are proposed for decreases, some for increases and others for flat funding. The rationale for the uneven treatment is unclear.

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[5] See OMB's PART summaries, where t specifies reductions to these program at http://www.whitehouse.gov/omb/budget/fy2005/pdf/ap_cd_rom/part.pdf

[6] EPA also disagrees with OMB's conclusion that the ecological research program failed to coordinate its research agenda within EPA or with outside agencies or researchers (suggesting redundancies with other programs), and that previous evaluations of the ecological research program were too focused on process measures.

Why was the STAR portion of these programs cut and who decided to cut it?
OMB's PART review did not address the STAR program, other than a brief mention of NAS's positive review of the STAR-funded ecological research. As a result, it appears that the STAR cuts may have emerged from EPA as it decided how to allocate the overall reductions required by OMB. The ultimate reason, however, is difficult to know because final decisions on reductions are usually made in negotiations between the agency and OMB, which are not made public.

Attachments:

Attachment A. Summary of the NAS Report on STAR
Attachment B. Summary of the PART program and process.
Attachment C. Summary of the GAO Report on PART

Attachment B. Summary of the PART program and process.

What is the Program Assessment Rating Tool (PART)?

The PART is the latest executive branch initiative designed to better align spending decisions and program performance, often called "performance budgeting. The current statutory framework for performance budgeting is the Government Performance and Results Act, which became law in 1993. President George W. Bush announced his strong support for linking performance and budget, when he made it a major goal of the "President's Management Agenda." A key element in accomplishing this objective is the Office of Management and Budget's PART. The Administration views the PART as enabling more effective implementation of GPRA, and as aligned more closely with budgeting decisions than GPRA.

According to OMB, the PART is a diagnostic tool meant to provide a consistent approach to evaluating federal programs[7] as part of the budget formulation process. The PART, which is implemented by OMB's budget examiners, requires an examiner to answer 25 yes/no questions under four overarching categories. Each of the four categories is given a specific weight for determining an overall numerical score for each program. The categories and their weightings are: (1) program purpose and design (e.g., is the design clear and purpose sensible?) (20 percent); (2) strategic planning, (e.g., has the program set appropriate annual and long-term goals?) (10 percent); (3) program management, (is there sound financial and management oversight?) (20 percent); and (4) program results, (has the program is met its annual and long-term goals?) (50 percent). OMB asks a few supplementary questions, which vary depending on what type of program is under review, such as block grant, regulation, or R&D. Based on the total score, programs are rated as either effective, moderately effective, adequate, ineffective, or results not demonstrated.

OMB applied the PART to 234 programs in FY 2004 across all federal agencies, and plans to rate nearly 100 percent of all remaining programs over the next four years. Of the 234 programs, over 100 programs received ratings "results not demonstrated." According to a recent GAO study, discretionary programs that received effective scores tended to see budget increases and programs that received ineffective scores tended to receive budget decreases. For programs that received "results not demonstrated" scores, the budget story was more mixed. According to GAO, programs that received this score tended to indicate programs for which OMB and the Agency could not agree on appropriate performance measures.

[7] There is no standard definition of program, though it is intended to capture a set of activities clearly recognized as a program, having a discrete budget, or related to the level at which budget decisions are made.

Witness Questions:

Questions for Clay Johnson III, Deputy Director for Management, Office of Management and Budget

In your testimony, please describe the justification for the proposed reductions to EPA's STAR grant research on ecological systems, pollution prevention, endocrine disruptors, and mercury. In particular, please focus your testimony on the following questions:

1. To what extent is the proposed reduction in each of these research areas based on the evaluation of EPA's research programs that OMB undertook with the PART?

2. Given that the PART review did not specifically assess the extramural portion of the research programs, why was the extramural portion of the program cut?

3. Why does OMB's PART review of the ecological research program tend to treat it as an applied research program when EPA characterizes it more as basic research? Is a single performance score under the PART tool appropriate for reviewing a diverse research program, such as EPA's endocrine disruptor research, that combines basic, applied, intramural and extramural research? To what extent, should EPA's R&D performance measures be based on specific regulatory program outcomes or environmental outcomes?

4. Does OMB agree with the Government Accounting Office's recommendations for improving the PART process and its content? How will you implement those recommendations?

Questions for Paul Gilman, Assistant Administrator, Office of Research and Development, U.S. EPA

Please give a brief description of the STAR extramural research program and how it fits into EPA's overall R&D program. In addition, please answer the following questions:

1. Given the positive review by the National Academy of Sciences of the STAR program last year, why was the STAR program cut?

2. Given the elimination of EPA's STAR grants for research on ecological systems, pollution prevention, endocrine disruptors and mercury, does EPA now believe it no longer important to seek out the expertise of university researchers in these fields.

3. How does EPA's ecological research compare to research supported by the National Science Foundation and other Federal research programs? To what extent does EPA coordinate its research with those agencies?

4. Does EPA characterize its research on ecological systems, pollution prevention, endocrine disruptors and mercury as basic or applied research?

5. What performance measures are most appropriate for evaluating these programs? To what extent does EPA believe that the performance measures for these programs should be tied to the outcomes of specific regulatory programs or environmental outcomes?

6. What research would not be done as a result of the proposed reductions and what impact would this have on our scientific understanding and EPA's regulatory programs?

Questions for Paul Posner, Managing Director, Strategic Issues, U.S. Government Accounting Office.

In your testimony, please describe GAO's findings and recommendations concerning the PART and answer the following questions:

1. What unique problems do research programs raise for evaluation tools like PART? What types of evaluation techniques and performance measures are most appropriate for reviewing basic research programs and what types are most appropriate for applied research? How should OMB decide whether a research program should be evaluated as a basic or applied program?

2. How should the PART deal with programs that have several distinct elements, for instance a single research program that funds both basic and applied, and intramural and extramural research?

Questions for Gene Matanoski, Professor, Department of Epidemiology,
Johns Hopkins University
Chair, EPA Science Advisory Board FY 05 Budget
Former Chair, EPA Science Advisory Board

In your testimony, please describe the Science Advisory Board's views on the proposed cuts to the STAR grant program and OMB's PART review of the ecological and pollution prevention research programs. In addition, please answer the following questions:

1. What has the SAB recommended to EPA in terms of balancing its research and development (R&D) investments between intramural and extramural research and between basic and applied research? Are SAB's recommendations consistent with recommendations from other reviews of EPA's science programs?

2. What performance measures are most appropriate for evaluating EPA's research programs on ecological systems, pollution prevention, endocrine disruptors and mercury? To what extent should performance measures differ for basic and applied research programs at EPA? Should EPA's R&D performance measures be tied to the outcomes of specific regulatory programs or environmental outcomes?

Questions for Costel Denson, Professor, Department of Engineering,
University of Delaware,
Member of the National Research Council panel for the report, *The Measure of STAR*

1. How important are the extramural portions of EPA's research efforts, including those for research on ecological systems, pollution prevention, endocrine disruptors, and mercury? What are the likely effects the elimination of these grants will have on our scientific understanding and EPA's regulatory programs?

2. How important is it that EPA ensures that some portion of its environmental research funding support extramural research? What portion is an optimal amount?

3. What performance measures are most appropriate for judging the performance of EPA's STAR grant program? To what extent should the STAR program be evaluated as basic research or applied? How well does the STAR program perform relative to other federal research programs of similar design?

4. What actions should EPA take to strengthen its STAR research grant program?